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Merle Cunningham

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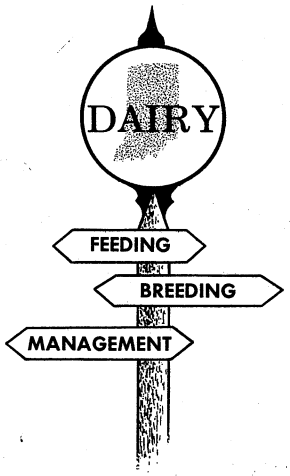

Forage Feeding Guide for Dairy Cattle

Merle Cunningham, Extension Dairyman

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All profitable dairy farms have a good feeding program. Top quality forage is part of the key to their success. The practice of supplementing this forage with the correct kind and amount of grain concentrate is equally important for maximum return to the dairy business.

The use of forage testing may help you as a dairyman balance your herd ration. You can often reduce the feeding of grain concentrates with excellent forages. With lower-quality forages you will need to increase the level of grain concentrate to avoid lowered milk production.

To use forage testing effectively, you need to know more than just the protein content of the forage. To feed cows properly, their intake of forage and their milk production must be known.

Periodic measurement of feed consumed, forage testing and milk production records, used together, should help you develop or maintain a good feeding program. The following information is intended to help you establish or maintain a good feeding program.

How to Determine Forage Consumption

The nutrients not provided from forage must be provided from grain concentrates. Therefore, you should measure the forage consumption of each cow as accurately as possible.

Hay

1. Weigh several bales to find the average weight per bale.
2. Multiply the average weight by the number of bales fed each day to find the total daily amount.
3. Correct for wastage by estimating this weight and subtracting from the total weight fed.
4. Divide the corrected total daily amount of hay fed by the number of cows being fed. This value will be an estimate of the pounds of hay eaten by the average cow in the herd.
5. To determine the pounds consumed per 100 pounds of bodyweight, divide the average weight of the cow (in hundred pounds) into the average hay consumption per cow.

Silage

1. Periodic weights of silage eaten in one day should be made.
2. Or, you may estimate from Tables 1 or 2. Table 1 shows the pounds of silage in each foot of depth in an upright silo. Table 2 shows the pounds of silage for each foot of length in a horizontal silo.

Example: Use Table 1 to determine the amount of silage fed from an upright silo. Suppose you are feeding low-moisture silage from a 16-foot diameter upright silo. The silage you are now feeding is between 20-25 feet from the original level where the silage

Table 1. Weight of settled corn and low-moisture (L.M.)[a] silage per foot of depth in upright silos.[b]

If the level of silage is this far down from original settled height:	And your silage is:	Here is what the silage weighs at different depths in the following silos (width of silo) 14 feet	16 feet	18 feet	20 feet	22 feet	24 feet
feet		pounds per foot of depth					
5-10 [c]	Corn	6,850	8,950	11,350	14,000	16,950	20,150
	L.M.	4,900	6,450	8,150	10,050	12,150	14,450
10-15	Corn	7,550	9,900	12,500	15,450	18,700	22,250
	L.M.	5,400	7,100	8,950	11,050	13,400	15,950
15-20	Corn	7,950	10,400	13,200	16,250	19,700	23,400
	L.M.	5,700	7,450	9,450	11,650	14,100	16,800
20-25	Corn	8,200	10,700	13,550	16,750	20,250	24,100
	L.M.	5,900	7,700	9,700	12,000	14,500	17,250
25-30	Corn	8,300	10,850	13,700	16,950	20,500	24,350
	L.M.	5,950	7,750	9,800	12,150	14,700	17,450
30-35	Corn	8,500	11,050	14,000	17,300	20,950	24,900
	L.M.	6,100	7,950	10,050	12,400	15,000	17,850
35-40	Corn	8,700	11,350	14,350	17,750	21,450	25,500
	L.M.	6,250	8,150	10,300	12,700	15,400	18,300
40-45	Corn	8,750	11,400	14,400	17,800	21,550	25,650
	L.M.	6,250	8,150	10,350	12,750	15,450	18,350
45-50	Corn	8,800	11,500	14,550	18,000	21,750	25,900
	L.M.	6,300	8,250	10,450	12,900	15,600	18,500

a/ L.M. Silage-- low moisture silage at 55 percent moisture

b/ Adapted from USDA Misc. Publication No. 810, Revised 1964; figures based on 70 percent moisture corn silage and 55 percent moisture grass-legume silage. The above table assumes that silos hold approximately the same amount of dry matter whether ensiled at 55 percent or 70 percent moisture silage.

c/ The weight of the top 5 feet depends on the amount of top spoilage.

had settled after filling. You are feeding 40 cows and it takes 4 days to feed out one foot of silage. Select the 20-25 feet level of silage on the left side of the table. Then, select the column for 16-diameter silos. The table shows each foot of depth at this point contains 7,700 pounds of low-moisture silage so the following calculations can be made:

- 7,700 pounds, divided by 4 days, equals 1,925 pounds fed per day, and

- 1,925 pounds, divided by 40 cows, equals 48 pounds eaten by the average cow each day.

Example: Use Table 2 to estimate the amount of silage fed from a horizontal silo. Suppose you are feeding from a horizontal silo that averages 16 feet wide and 6 feet deep.

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Table 2. Weight of settled silage per foot of length in horizontal silos [a/]

If your silo is this wide at point of feeding	Here is what a one-foot cross-section of silage weighs at the following average depths: [b/]			
	5 feet	6 feet	7 feet	8 feet
feet	pounds per foot of length			
12	2,400	2,900	3,350	3,850
14	2,800	3,350	3,900	4,500
16	3,200	3,850	4,500	5,100
18	3,600	4,300	5,050	5,750
20	4,000	4,800	5,600	6,400
22	4,400	5,300	6,150	7,050
24	4,800	5,750	6,700	7,700

a/ Adapted from USDA Misc. Publication No. 810, Revised October, 1964; for silage weighing 40 pounds per cubic foot.

b/ Corn silage or grass-legume silage may weigh more than above figures indicate when well packed.

You are feeding 30 cows and it takes 2 days to feed back one foot in the silo. Reading across from the left--16 feet wide; to the column--6 feet depth, you note that there are 3,850 pounds of silage for each foot of length in the silo. Assuming no wastage you make the following calculations.

- 3,850 pounds, divided by 2 days, equals 1925 pounds fed each day.

- 1,925 pounds, divided by 30 cows, equals 64 pounds eaten by the average cow each day.

Expressing Other Forage Intakes On A Hay-Intake Basis

A cow must eat considerably more green-chopped forage or silage to obtain the same amount of dry matter as she would obtain from hay. The common rule is that three pounds of silage are equal to one pound of hay. However, this rule isn't valid for extremely low or high moisture forages.

To use the grain-concentrate feeding tables, all forages fed must be expressed as being equal to a certain amount of hay. This corrects for moisture differences and all forages can be expressed on a "hay equivalent" basis. Table 3 shows the amounts of other forages needed to equal one pound of hay, or one hay equivalent.

Example: Suppose you're feeding each cow an average of 45 pounds of corn silage containing 70 percent moisture, plus 30 pounds of grass-legume silage containing 55 percent moisture.

To convert the corn silage, divide 45 pounds by 3.0 (the number of pounds of corn silage equal to one pound of hay). This equals 15 pounds of hay equivalent. Next, convert the grass-legume silage by dividing 30 pounds by 2.0. This equals another 15 pounds of hay equivalent.

Adding the two values, you are feeding the equivalent of 30 pounds of hay. If your

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cows average 1,200 pounds, they would be eating 2.5 pounds of hay equivalent per 100 pounds of bodyweight (30 divided by 12 equals 2.5).

Table 3. Amounts of forages needed to equal one pound of hay (one hay equivalent)

If forages have this much moisture	It takes this amount to equal one pound of hay or hay equivalent
(Percent)	(Pounds)
80	4.5
75	3.6
70	3.0
65	2.6
60	2.3
55	2.0
50	1.8

Supplementing Forages with Grain Concentrates

The amount of grain concentrate needed to maintain various levels of production depends upon the kind and amount of forage being eaten by the cows.

For example, late-cut, stemmy hay isn't as palatable or digestible as early-cut, leafy hay. Because of the lower intake and less digestible energy of late-cut, stemmy hay, more grain concentrates must be fed to obtain satisfactory levels of milk production.

Tables 4a, 5a, 6a and 7a indicate the amounts of grain concentrate needed for different levels of milk production. These tables take into account the amount of forage consumed (as hay equivalent) and its estimated net energy value, as well as the average breed size and percentage butterfat produced.

To determine the amount of grain concentrate needed, select the table that indicates the proper amount of hay equivalent being eaten. The tables are listed as:

Table 4a - Grain-Concentrate Guide for Cows Eating 1.5 pounds of Hay Equivalent per 100 Pounds of Body Weight

Table 5a - Grain-Concentrate Guide for Cows Eating 2.0 Pounds of Hay Equivalent per 100 Pounds of Body Weight

Table 6a - Grain-Concentrate Guide for Cows Eating 2.5 Pounds of Hay Equivalent per 100 Pounds of Body Weight

Table 7a - Grain-Concentrate Guide for Cows Eating 1.5 Pounds of Hay Equivalent per 100 Pounds of Bodyweight When Forage is of High-Quality and restricted.

After selecting the table which is most appropriate, select the portion of the table for your breed and average percentage butterfat. Find the pounds of grain concentrate needed by reading the figure across from the pounds of milk produced daily and in the correct column for percentage butterfat.

The following examples may assist you.

Example 1: Suppose you are milking Holsteins and have determined that they are eating an average of 2.0 pounds of hay equivalent per 100 pounds of bodyweight daily. Select Table 5a.

Next, select the "Large Breeds" portion of the table, then find the amount of grain concentrate needed. Cows producing 60 pounds of 3.5 percent milk should receive 20.5 pounds of grain concentrate daily.

Example 2: Suppose you want to limit your good-quality forage to your Jersey cows because of an insufficient supply. Normally,

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they would eat more, but you are restricting their intake to about 1.5 pounds of hay equivalent per 100 pounds of bodyweight. Select Table 7a.

Next, select the "Small Breeds" portion of the table, then read the amount of grain needed. Cows producing 52 pounds of 4.5 percent milk should receive 22.5 pounds of grain concentrate daily.

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Table 4a. Grain-concentrate guide for cows eating 1.5 pounds of hay equivalent per 100 pounds of body weight

When cows produce this much milk per day:	Daily grain concentrate requirement when percent butterfat and breed size is:					
	Large breeds			Small breeds		
	3.5	4.0	4.5	4.0	4.5	5.0
pounds		pounds			pounds	
20	9.5	10.0	11.0	10.0	10.5	11.5
24	11.0	12.0	12.5	11.5	12.0	13.0
28	12.5	13.5	14.5	13.0	14.0	15.0
32	14.5	15.0	16.0	15.0	15.5	17.0
36	16.0	16.5	17.5	16.5	17.5	18.5
40	17.0	18.5	19.5	18.0	19.0	20.5
44	18.5	20.0	21.0	20.0	21.0	22.5
48	20.0	21.5	23.0	21.5	22.5	23.5
52	22.0	23.0	24.5	23.0	24.5	26.5
56	23.5	25.0	26.5	24.5	26.0	28.5
60	25.0	26.5	28.0	26.0	28.0	30.0
64	26.5	28.0	30.0	28.0	29.5	32.0
68	28.0	29.5	31.5	29.5	31.5	34.0
72	29.5	31.5	33.0	31.0	33.0	36.0
76	31.0	33.0	35.0	32.5	34.5	38.0
80	32.5	34.5	36.5	34.5	36.5	39.5
84	34.0	36.0	38.5	36.0	38.0	41.5
88	35.5	38.0	40.0	37.5	40.0	43.5
92	37.0	39.5	42.0	39.0	41.5	45.5
96	38.5	41.0	43.5	40.5	43.5	47.0
100	40.0	42.5	45.5	42.5	45.0	49.0

Note:

Some cows will not readily consume the calculated amount of grain concentrate required. Where large amounts are required, extreme caution in individual feeding is needed.

The suggested guide does not include any feed for growing two-and three-year-old cows or for cows in last two months of pregnancy. These animals may need 2 to 4 pounds of additional grain concentrate.

Guide does not allow for conditioning the dry cow and may not allow sufficient energy during early lactation. See Mimeo DH-111, Lead Feeding.

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Table 4b. Suggested crude protein levels for grain-concentrate mixtures--to be used only with grain-concentrate requirement Table 4a.

When cows produce this much milk per day:	And the forage protein content is: a/									
	Large breeds b/					Small breeds b/				
	14	12	10	9	8	14	12	10	9	8
pounds	percent crude protein in grain-concentrate should be:									
30	10	10	12	14	15	10	12	14	15	16
40	10	12	14	15	16	12	13	15	15	16
50	11	13	14	15	16	13	14	15	16	16
60	12	13	15	15	16	13	14	15	16	16
70	13	14	15	16	16	14	15	16	16	16
80	13	14	15	16	16	14	15	16	16	17
90	14	15	16	16	17	15	15	16	16	17
100	14	15	16	16	17	15	16	16	16	17

a/ On a moisture-free basis

b/ Figures based on average butterfat for large breeds of 3.75 percent, and for small breeds of 4.5 percent. Adjustment in percent protein should be made as the percentage butterfat varies from the average values used in above table.

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Table 5a. Grain-concentrate guide for cows eating 2.0 pounds of hay equivalent per 100 pounds of body weight

When cows produce this much milk per day:	Daily grain concentrate requirement when percent butterfat and breed size is:					
	Large breeds			Small breeds		
	3.5	4.0	4.5	4.0	4.5	5.0
pounds	pounds			pounds		
20	5.0	5.5	6.5	6.5	7.0	7.5
24	6.5	7.5	8.0	8.0	9.0	9.5
28	8.0	9.0	10.0	9.5	10.5	11.5
32	10.0	10.5	11.5	11.5	12.0	13.5
36	11.5	12.0	13.0	13.0	14.0	15.5
40	13.0	14.0	15.0	14.5	15.5	17.5
44	14.5	15.5	16.5	16.0	17.5	19.0
48	15.5	17.0	18.5	18.0	19.0	20.5
52	17.5	18.5	20.0	19.5	21.0	23.0
56	19.0	20.5	22.0	21.0	22.5	25.0
60	20.5	22.0	23.5	22.5	24.5	27.0
64	22.0	23.5	25.5	24.5	26.0	28.5
68	23.5	25.0	27.0	26.0	28.0	30.5
72	25.0	27.0	28.5	27.5	29.5	32.5
76	26.5	28.5	30.5	29.0	31.0	34.5
80	28.0	30.0	32.0	31.0	33.0	36.0
84	29.5	31.5	34.0	32.5	34.5	38.0
88	31.0	33.5	35.5	34.0	36.5	40.0
92	32.5	35.0	37.5	36.5	38.0	42.0
96	34.0	36.5	39.0	37.5	40.0	44.0
100	35.5	38.0	41.0	39.0	41.5	45.5

Note:

Some cows will not readily consume the calculated amount of grain concentrate required. Where large amounts are required, extreme caution in individual feeding is needed.

The suggested guide does not include any feed for growing two-and three-year-old cows or for cows in last two months of pregnancy. These animals may need 2 to 4 pounds of additional grain concentrate.

Guide does not allow for conditioning the dry cow and may not allow sufficient energy during early lactation. See Mimeo DH-111, Lead Feeding.

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Table 5b. Suggested crude protein levels for grain-concentrate mixtures--to be used only with grain-concentrate requirement Table 5a

When cows produce this much milk per day:	And the forage protein content is a/									
	Large breeds b/					Small breeds b/				
	14	12	10	9	8	14	12	10	9	8
pounds	percent crude protein in grain concentrate should be:									
30	10	10	12	14	17	10	11	14	16	17
40	10	10	13	15	17	10	13	15	16	17
50	10	12	15	16	17	12	14	15	16	17
60	11	13	15	16	17	13	14	16	16	17
70	12	14	16	16	17	13	15	16	16	17
80	12	14	16	17	17	14	15	16	17	17
90	13	14	16	17	17	14	15	16	17	17
100	14	15	16	17	17	15	15	16	17	17

a/ On a moisture-free basis

b/ Figures based on average butterfat for large breeds of 3.75 percent, and for small breeds of 4.5 percent. Adjustment in percent protein should be made as the percentage butterfat varies from the average values used in above table.

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Table 6a. Grain-concentrate guide for cows eating 2.5 pounds of hay equivalent per 100 pounds of body weight

When cows produce this much milk per day:	Check the daily grain-concentrate requirement under the correct column for percentage butterfat and breed size					
	Large breeds			Small Breeds		
	3.5	4.0	4.5	4.0	4.5	5.0
pounds		pounds			pounds	
20	---	1.0	1.5	3.0	3.5	4.0
24	2.0	2.5	3.0	4.5	5.0	6.0
28	3.5	4.0	5.0	6.0	7.0	8.0
32	5.0	6.0	6.5	7.5	8.5	10.0
36	6.5	7.5	8.5	9.5	10.0	11.5
40	8.0	9.0	10.0	11.0	12.0	13.5
44	9.5	10.5	12.0	12.5	13.5	15.5
48	11.0	12.5	13.5	14.0	15.5	17.5
52	12.5	14.0	15.5	15.5	17.0	19.5
56	14.0	15.5	17.0	17.5	19.0	21.0
60	15.5	17.0	19.0	19.0	20.5	23.0
64	17.0	19.0	20.5	20.5	22.5	25.0
68	18.5	20.5	22.5	22.0	24.0	27.0
72	20.0	22.0	24.0	24.0	25.5	29.0
76	22.5	24.0	25.5	25.5	27.5	30.5
80	23.0	25.5	27.5	27.0	29.5	32.5
84	24.5	27.0	29.0	28.5	31.0	34.5
88	26.0	28.5	31.0	30.5	33.0	36.5
92	27.5	30.0	32.5	32.0	34.5	38.0
96	29.0	32.0	34.5	33.5	36.0	40.0
100	30.5	33.5	36.0	35.0	38.0	42.0

Note:

Some cows will not readily consume the calculated amount of grain concentrate required. Where large amounts are required, extreme caution in individual feeding is needed.

The suggested guide does not include any feed for growing two-and three-year-old cows or for cows in last two months of pregnancy. These animals may need 2 to 4 pounds of additional grain concentrate.

Guide does not allow for conditioning the dry cow and may not allow sufficient energy during early lactation. See Mimeo DH-111, Lead Feeding.

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Table 6b. Suggested crude protein levels for grain-concentrate mixtures to be used only with grain-concentrate requirement Table 6a

When cows produce this much milk per day:	And the forage protein content is [a]									
	Large breeds [b]					Small breeds [b]				
	14	12	10	9	8	14	12	10	9	8
pounds	percent crude protein in grain-concentrate should be:									
30	10	10	14	20	20	10	10	14	17	20
40	10	10	14	18	20	10	12	15	17	19
50	10	11	15	18	20	10	13	16	17	19
60	10	12	16	18	20	12	14	16	17	19
70	10	13	16	18	19	13	15	17	17	18
80	12	14	16	18	19	14	15	17	17	18
90	12	15	17	18	19	14	15	17	17	18
100	13	15	17	18	19	14	15	17	17	18

[a] On a moisture-free basis

[b] Figures based on average butterfat for large breeds of 3.75 percent, and for small breeds of 4.5 percent. Adjustment in percent protein should be made as the percentage butterfat varies from the average values used in above table.

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Table 7a. Grain-concentrate guide for cows eating 1.5 pounds of hay equivalent per 100 pounds of body weight when forage is of high quality and restricted.

When cows produce this much milk per day:	Check the daily grain concentrate requirement under the correct column for percentage butterfat and breed size					
	Large breeds			Small Breeds		
	3.5	4.0	4.5	4.0	4.5	5.0
pounds		pounds			pounds	
20	7.5	8.0	8.5	8.5	9.0	9.5
24	9.0	9.5	10.5	10.0	10.5	11.5
28	10.5	11.5	12.0	11.5	12.5	13.5
32	12.0	13.0	14.0	13.0	14.0	15.5
36	13.5	14.5	15.5	15.0	15.5	17.0
40	15.0	16.0	17.5	16.5	17.5	19.0
44	16.5	18.0	19.0	18.0	19.5	21.0
48	18.0	19.5	21.0	19.5	21.0	22.0
52	19.5	21.0	22.5	21.5	22.5	25.0
56	21.0	22.5	24.0	23.0	24.5	26.5
60	22.5	24.5	26.0	24.5	26.0	28.5
64	24.0	26.0	27.5	26.0	28.0	30.5
68	25.5	27.5	29.5	28.0	29.5	32.5
72	27.5	29.0	31.0	29.5	31.5	34.5
76	29.0	31.0	33.0	31.0	33.0	36.0
80	30.5	32.5	34.5	32.5	35.0	38.0
84	32.0	34.0	36.5	34.5	36.5	40.0
88	33.0	35.5	38.0	36.0	38.5	42.0
92	35.0	37.5	39.5	37.5	40.0	43.5
96	36.5	39.0	41.5	39.0	41.5	45.5
100	38.0	40.5	43.0	40.5	43.5	47.5

Note:

Some cows will not readily consume the calculated amount of grain concentrate required. Where large amounts are required, extreme caution in individual feeding is needed.

The suggested guide does not include any feed for growing two-and three-year-old cows or for cows in last two months of pregnancy. These animals may need 2 to 4 pounds of additional grain concentrate.

Guide does not allow for conditioning the dry cow and may not allow sufficient energy during early lactation. See Mimeo DH-111, Lead Feeding.

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Table 7b. Suggested crude protein levels for grain-concentrate mixtures to be used only with grain-concentrate requirement Table 7a

When cows produce this much milk per day:	And the forage protein content is [a]									
	Large breeds [b]					Small breeds [b]				
	14	12	10	9	8	14	12	10	9	8
pounds	percent crude protein in grain-concentrate should be:									
30	10	12	15	16	18	11	13	15	16	17
40	11	13	16	17	18	13	14	16	17	17
50	12	14	16	17	18	14	15	16	17	17
60	13	15	16	17	18	14	15	16	17	17
70	14	15	16	17	18	15	16	16	17	17
80	14	15	16	17	18	15	16	16	17	17
90	15	16	17	17	18	15	16	17	17	17
100	15	16	17	17	18	15	16	17	17	17

a/ On a moisture-free basis

b/ Figures based on average butterfat for large breeds of 3.75 percent, and for small breeds of 4.5 percent. Adjustment in percent protein should be made as the percentage butterfat varies from the average values used in above table.

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Adjusting Crude Protein Content of Grain Concentrate Mixture

The percent crude protein needed in the grain concentrate mixture depends largely upon the quality of the forage being fed--its protein content and amount consumed. The percent protein needed will also depend upon the amount of grain concentrate being fed.

Tables 4b, 5b, 6b and 7b are designed to show you the approximate level of protein needed when cows are fed according to the grain concentrate requirement Tables 4a, 5a, 6a and 7a. For example, Table 4b is accurate only when used with Table 4a. These tables are not accurate when used alone or with other guides.

These tables consider the amount of forage consumed, its protein content and indicate the percent crude protein required in the grain concentrate to balance the ration.

To use the tables, select the one which corresponds to your grain concentrate requirement table.

Next, you need to determine the average percent protein of the forage consumed. It must be expressed on a moisture-free or dry-matter basis, rather than on an "as-fed" basis. This value can be read directly from the chemical analysis report. When only one forage is being fed, you are ready to select the column under your breed size and the correct forage protein content. The percent protein needed in the grain concentrate mixture is read directly across from the pounds of milk produced daily and under the proper column for the forage protein content.

When more than one forage is being fed, you need to determine the average percent protein for the total forage. Read the correct percent protein value (moisture-free) for each forage from the chemical analysis report. Determine the hay equivalent from each forage and calculate the average forage crude protein content.

Example: You are feeding 1,300-pound Holstein cows an average of 44 pounds of silage (moisture content--60 percent) plus 13 pounds of hay per cow per day.

The chemical analysis report shows that the silage contains 8.0 percent crude protein and the hay contains 14.0 percent crude protein, both on a moisture-free basis. What is the average protein content of these forages?

By using Table 3 to determine the total hay equivalents you find that the cows are eating 2.5 pounds of hay equivalent per 100 pounds of bodyweight as follows:

1. 44 pounds of 60 percent moisture silage equals--19 pounds hay equivalent (44 divided by 2.3 = 19.1)

2. 13 pounds of hay equals--13 pounds hay equivalent

3. Total hay equivalent equals - 32 pounds (19 + 13)

4. 32 pounds hay equivalent divided by the weight of cows in hundred pounds or 13 equals 2.5 pounds of hay equivalent per 100 pounds of bodyweight, so grain-concentrate requirement Table 6a and protein Table 6b would be used.

The next step is to determine the correct column for the forage protein content in Table 6b. In the above example, this is calculated as follows:

1. 19 pounds of hay equivalent from silage multiplied by .08 crude protein equals -- 1.5 pounds crude protein

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2. 13 pounds of hay equivalent from hay multiplied by--.14 crude protein equals --1.8 pounds crude protein

3. Total pounds crude protein (3.3) divided by total hay equivalent (32) equals .103 or 10.3 percent crude protein for the two forages being fed.

4. Select the column nearest the protein content of your forage (in this case, 10 percent).

Cows producing an average of 50 pounds of milk need approximately 15 percent crude protein in their grain concentrate mixture. Remember, this value isn't valid unless the cows are fed according to the grain-concentrate requirement Table 6a.

To determine the amount of grain and protein supplement needed to provide the desired protein level, see Mimeo DH-106.

Use of Feed Composition Tables

When chemical analyses are not available on some or all forages, tables of average composition (such as Morrison's) may be used to derive grain concentrate and protein feeding level.

Chemical analyses on forages as well as common farm grains are preferred.

Other Considerations in Feeding Dairy Cows

Grain concentrate feeding tables should only be used as guides. They are based on average values and do not consider the individual cow's physical condition, age, stage of lactation or ability to consume grain concentrate or forage. Factors such as palatability, bulk, physiological effects and economics should also be considered in developing the dairy herd ration.

Particular attention should be given to the condition of the dry cow and challenging her to consume grain concentrate prior to calving. This practice allows greater consumption immediately after calving when the cow's milk production requirements often exceed her ability to eat enough feed.

Likewise, "lead feeding" during the early part of the lactation until peak production occurs will result in more milk per lactation for many cows. Thus, feeding tables may not allow sufficient energy during this period of lactation. The feeding of grain concentrates above feeding table requirement during early lactation permits cows to respond to the additional energy consumed. Feeding tables are based on what the cow is producing and not on what she is capable of producing if challenged by "lead feeding". (See Mimeo DH-111, "Lead Feeding").

This guide is intended to help you develop a better feeding program. Its accuracy will depend largely upon your individual efforts in securing good feed samples for chemical analysis, and accurate recording of feed intake and milk production.

Additional help may be obtained through your local County Extension Office.

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